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U. S. DEPARTMENT OF AGRICULTURE

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
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Volume 10 January 15, 1960 Number 3

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

BOLL WEEVIL hibernation survey in Georgia is reported. (p. 26).

Several species of BARK BEETLES constitute a serious threat to some valuable timber in California in 1960. (p. 26). Another bark beetle (Pityophthorus juglandis) has become established in California black walnut in southern California. (p. 27).

COMMON CATTLE GRUB populations medium on yearling steers examined in Canadian County, Oklahoma, and an unusual instance of occurrence in man reported in California. (p. 27).

Three new KHAPRA BEETLE infestations reported in Imperial County, California. (p. 27).

INSECT DETECTION: Alfalfa plant bug reported for first time in Kentucky and sweetclover aphid recorded for the first time in Rich and Daggett Counties, Utah. (p. 25).

Status of EUROPEAN CORN BORER in 1959. (pp. 29-38).

GRASSHOPPER adult survey, fall 1959 (map). (following page 38).

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Reports in this issue are for the week ending January 8, unless otherwise indicated.

WEATHER OF THE WEEK ENDING JANUARY 11

Mean temperatures for this week were near or below normal over the Far West, the Southern States, and from North Dakota to New England. Above-normal readings extended over an area from the northern and central Rocky Mountains and northwestern Great Plains across the midsection of the country to the middle Atlantic coast and also prevailed in the extreme Southeast. Mild, springlike weather in southern Florida was ideal for rapid plant growth, as temperatures touched the low 80's on most days in this State; Marathon recorded 87°, and Miami 84° on Thursday for a new record high temperature on that date.

Moderate to heavy precipitation extended inland from the coastal regions of the Pacific Northwest and California, as generally cloudy and cool weather continued there most of the week. Totals ranged up to 2-1/2 inches in coastal sections of Oregon, with snow in several lower elevation areas of Oregon and Washington providing a good protective cover for the winter wheat crop. Precipitation was very light or absent over a broad band from Arizona northeastward across Colorado and the central Great Plains to the Ohio Valley. A low pressure area moving northeastward from the north-central Gulf of Mexico produced heavy snow in a belt extending from the Texas Panhandle to the Virginias and light to moderate rain over most other areas of the Southern States on Tuesday and Wednesday. Over 11 inches of snow fell at Little Rock, Arkansas, for the heaviest of record there in January since 1918, and accumulations ranged up to 9 inches in Tennessee, 7 inches in northern Mississippi, southwestern Virginia, and the High Plains of Texas, with lighter amounts in other sections from Missouri to North Carolina.

Temperatures fell to near -30° in the Dakotas, Minnesota and Wisconsin on Tuesday morning as extremely cold arctic air covered the area. Marked warming with 24-hour temperature rises of 40° to 50° began late on Tuesday, and abnormally mild weather was the rule over most of the Great Plains and Middle West the remainder of the week, as tropical air moved northward from the Gulf of Mexico. Temperatures reached the 40's in South Dakota, the lower 60's in southern Indiana, and the 70's in Oklahoma and Arkansas over the weekend. A second cold wave late in the week moved down over northern sections of North Dakota, the upper Great Lakes, and the New York-New England area. Below-zero temperatures reached southern New England and readings of -30° or lower were reported in Vermont, Maine, and the Adirondacks of eastern New York. At Massena, New York, the temperature remained below zero from late Friday night until Monday afternoon. Snow accompanied the cold air with 2 to 4 inches in southern New England and up to 8 inches in northern New York. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

ALFALFA PLANT BUG (*Adelphocoris lineolatus*) - KENTUCKY - Specimens taken from alfalfa at Lexington, Fayette County, on July 6, 1959, constitute a first reported record for this species in the State. Det. P. D. Ashlock. (Starks).

EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) - CALIFORNIA - Adults collected in Santa Barbara, Santa Barbara County. This species, which occurred only in the Imperial Valley for many years, has now become a pest of alfalfa in the coastal area as far north as Santa Barbara County. (Cal. Coop. Rpt.).

ALFALFA WEEVIL (*Hypera postica*) - VIRGINIA - Present in ground litter around alfalfa plants in an Appomattox County field; 2 fourth-instar and 6 second and third-instar larvae and one adult collected January 2, 1960. (Jones).

PEA APHID (*Macrosiphum pisi*) - OKLAHOMA - Populations continue low. Counts showed 12 per square foot of crown area in Garfield County fields. (Owens).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - OKLAHOMA - Populations continue to rise slowly in the north central area. Counts have risen to 240 per square foot of crown area in the Bison area, Garfield County. (Owens).

SWEETCLOVER APHID (*Therioaphis riehmi*) - UTAH - Collected in Rich and Daggett Counties in October, 1959. These collections represent new county records. (Knowlton).

A LEAF MINER (*Melanagromyza gibsoni*) - CALIFORNIA - Larvae medium in stems of alfalfa in Bonsall, San Diego County. (Cal. Coop. Rpt.).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - OKLAHOMA - Populations ranged 0.5-3 per linear foot in Kingfisher County, an apparent increase in population. (Owens).

GREENBUG (*Toxoptera graminum*) - OKLAHOMA - Low populations prevail throughout areas sampled. None were observed in wheat fields in Granite-Lone Wolf area of Greer and Kiowa Counties. (Hudson). Samples from 7 fields in Kingfisher and Garfield Counties averaged 1-3 per linear foot. (Owens). None were observed in fields sampled in Cotton and Tillman Counties. (Hatfield).

PLANTHOPPERS (*Sogata* spp.) - ARKANSAS - Identification of specimens taken in 42 fields during the hoja blanca survey in October 1959, revealed no *S. orizicola*, 5 males of *S. furcifera* and 21 females of *Sogata* sp. (Ark. Ins. Sur.).

WINTER GRAIN MITE (*Penthaleus major*) - OKLAHOMA - None observed in wheat fields in Kingfisher, Cotton, Tillman, Greer and Kiowa Counties. (Hudson, Owens, Hatfield).

A SOD FLY (*Metoponia rubriceps*) - CALIFORNIA - Larval populations medium to heavy in soil and sod in San Francisco, San Francisco County, and light in a cemetery in Coloma, San Mateo County. (Cal. Coop. Rpt.).

FRUIT INSECTS

CITRUS RED MITE (*Panonychus citri*) - FLORIDA - Activity has decreased to a very low level and will continue low through January. Infestations are presently at the lowest December level in 9 years of record. Moderate activity is present in the Bartow and west coast districts. (Simanton, Thompson, Johnson, Dec. 31,1959).

DICTYOSPERMUM SCALE (*Chrysomphalus dictyospermi*) - CALIFORNIA - Medium on lemon leaves and twigs in Santa Paula, Ventura County. (Cal. Coop. Rpt.).

Peach Insects in Texas - Adults, larvae and pupae of *Scolytus rugulosus* were abundant in bark of recently destroyed plum trees in Houston County. *Sanninoidea exitiosa*, *Synanthedon pictipes* and *Aspidiotus perniciosus* infestations were found to be heavy on old peach trees being removed from an orchard in Smith County. (Texas Coop. Rpt.).

TRUCK CROP INSECTS

CABBAGE LOOPER (*Trichoplusia ni*) - ARIZONA - Very light infestations continue in some central area lettuce. (Ariz. Coop. Sur.). TEXAS - Present in some lettuce and cabbage fields in lower Rio Grande Valley. Infestation appeared to be on a downward trend as no eggs were found. (Deer).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Sticky board collections for the period December 29, 1959 - January 4, 1960, were as follows: Kyrene - 2, Glendale - 2. (Ariz. Coop. Sur.).

ONION THRIPS (*Thrips tabaci*) - TEXAS - Light infestations noted on onions along the Rio Grande River, with heavier populations in Hidalgo County. (Deer).

COTTON INSECTS

BOLL WEEVIL (*Anthonomus grandis*) - GEORGIA - Fall examinations of surface trash from woods adjacent to old cotton fields, to determine the number of boll weevils in hibernation, were made in 4 regions in the State from November 20 to December 15, 1959. The State average was 716 live weevils per acre of surface trash. This is lower than the 9-year average of 1,216 and 1 year ago when the counts averaged 1,133 weevils. The averages for 1959 for the different areas where samples were collected were as follows: northwest (Gordon County) 145; north central (Butts, Spalding, Pike, Coweta and Meriwether Counties) 1,186; east central (Burke County) 823; and south (Tift, Atkinson, Berrien, Irwin and Turner Counties) 242. The averages for 1959 were lower in the north and north central areas but slightly higher in the east central and south than they were in 1958. Five samples of two square yards each were taken from each of 50 farms. Live weevils were found on 52 percent of the farms examined. The maximum number of weevils per acre found on a single farm was in Pike County, the number being 8,712. Samples from the same farms will be examined during the spring to determine the winter survival of weevils. (C. M. Beckham and L. W. Morgan).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BARK BEETLES - CALIFORNIA - *Ips* spp., *Dendroctonus brevicomis*, *D. monticolae* and *D. jeffreyi* constitute a serious threat to some of the finest timber in the State during 1960. Ponderosa and sugar pines in lower elevations, particularly in fringe timber, have already been hard hit and lodgepole and Jeffrey pine forests in the high country are currently being damaged. Drought conditions, along with unseasonably warm weather which prevailed all fall and winter, as well as unusually heavy lightning damage, heavy snow breakage, considerable scattered forest fire damage and, in some areas, slash left from early cuttings, have provided a plentiful supply of breeding material. These conditions are triggering epidemics in material that is ripe for attack. Sanitary salvage logging and falling and treating of infested trees is starting as a means of stemming the greatest bark beetle threat in more than a decade. Many choice recreational areas of high value and high usage are also threatened. (Cal. For. Pest Cont. Act. Coun.).

A BARK BEETLE (*Pityophthorus juglandis*) - CALIFORNIA - Medium to heavy on *Juglans californica* in an area around Tarzana, Los Angeles County. Previously reported from this area a year ago, this species has become quite prevalent and damaging to native black walnuts in the area this season, probably because of extreme drought conditions. Previously known from Arizona and New Mexico, it has now become established in the southern part of California. (Cal. Coop. Rpt.).

A CUTWORM (*Heliothis phloxiphaga*) - OREGON - Infesting a large greenhouse planting of geraniums in Portland, Multnomah County, December 15, 1959. Det. S. E. Crumb. (Larson).

A SCALE INSECT - MARYLAND - An undetermined species is affecting boxwood at Gibson Island, Anne Arundel County. (U. Md., Ent. Dept.).

SPRING CANKERWORM (*Paleacrita vernata*) - KANSAS - Male moths were flying December 26, 1959, in Manhattan, Riley County. (Thompson)

A GALL MIDGE (possibly *Contarinia coloradensis*) - ARIZONA - Collected in galls on needles of pine near Sedona, Coconino County. (Ariz. Coop. Sur.).

INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (*Hypoderma* spp.) - KANSAS - Light numbers appearing in Riley, Pottawatomie, Wabaunsee and Morris Counties. Approximately 20 percent of cattle checked at a sales barn were lightly infested. (Knapp, Peters). OKLAHOMA - *H. lineatum* larval population averaged 18 per head on approximately 400 yearling steers in Canadian County. Populations in mature cows averaged 9 per animal. (Howell). TEXAS - Larvae of *H. lineatum* appearing in backs of about 400 head of cattle in Bowie County. Price of infested animals being lowered about two cents per pound. (Jones). UTAH - Occurrence of larvae of unspecified species becoming common in cattle in northern portion of State. (Knowlton). CALIFORNIA - An unusual instance of the occurrence of a first-stage larva of *H. lineatum* taken from the skin of a human by a physician reported from Red Bluff, Tehama County. This is a rare case of this common cattle pest occurring in humans. Verified by Bureau of Vector Control. (Cal. Coop. Rpt.).

DOG FOLLICLE MITE (*Demodex canis*) - NORTH CAROLINA - Four cases reported to the State Veterinarian during November 1959. (Zweigart).

HOG LOUSE (*Haematopinus suis*) - KANSAS - Heavy on hogs checked at a sales barn in Pottawatomie County. (Knapp, Peters).

STORED-PRODUCT INSECTS

KHAPRA BEETLE (*Trogoderma granarium*) - CALIFORNIA - Three new infestations reported from Imperial County, involving 2 farm properties and one feed lot. One mill in Brawley, Imperial County, and one feed lot in Borrego, San Diego County, have been fumigated. Arrangements to fumigate the 4 remaining known infestations are underway. (Cal. Coop. Rpt.).

A DERMESTID (*Trogoderma parabile*) - ARIZONA - Extremely heavy populations of adults and larvae present in some central area grainmills. (Ariz. Coop. Sur.).

INDIAN-MEAL MOTH (*Plodia interpunctella*) - OKLAHOMA - Numerous reports of this species being especially numerous in homes in Stillwater, Perry and Woodward areas. (Howell, Bieberdorf).

BENEFICIAL INSECTS

CONVERGENT LADY BEETLE (*Hippodamia convergens*) - OKLAHOMA - Populations remain low in alfalfa fields in Garfield County and in wheat in areas of Kingfisher and Tillman Counties. (Hudson, Owens).

MISCELLANEOUS INSECTS

ELM LEAF BEETLE (*Galerucella xanthomelaena*) - OKLAHOMA - Appearing in diminishing numbers in habitations in Payne County. Overwintering populations generally lower than at this time in 1959. (Howell).

CORRECTION

CEIR 10(2):13 - AN ERIOPHID MITE (Aceria mangiferae) should read AN ERIOPHYID MITE (Aceria mangiferae). Same correction should be made under INSECT DETECTION on highlight page.

LIGHT TRAP COLLECTIONS

	Pseudaletia unipuncta	Prodenia ornithogalli	Feltia subterranea
ARIZONA			
Mesa 12/28-1/3		1	
FLORIDA			
Gainesville 12/31, 1/6		2	3
Monticello 1/5	2		2

STATUS OF THE EUROPEAN CORN BORER IN 1959

Survey Data Provided by State Agricultural Agencies,
Compiled and Summarized by Survey and Detection Operations,
Plant Pest Control Division,
United States Department of Agriculture

Cooperating agricultural agencies in 20 states reported on surveys conducted in their states to determine the abundance and distribution of the European corn borer (*Pyrausta nubilalis*) in 1959. All survey data, summaries or records of field observations were submitted to Survey and Detection Operations, Plant Pest Control Division office in Washington, D. C., for processing. This report is a compilation of the information submitted by the State agencies.

Distribution

Spread of the European corn borer during 1959 was rather limited. A total of 13 new counties was reported from Alabama, Arkansas, Colorado, Georgia, Michigan, North Carolina and Texas. The new county record in Texas was the first for that State. The 13 new counties reported during 1959 are a considerable decrease compared with the total of 58 new counties and parishes reported in 1958.

Counties reported as infested for the first time in 1959 are as follows:

Alabama

Lee

Arkansas

Garland
Hot Spring
Little River
Ouachita
Pike
Sevier

Colorado

Yuma

Georgia

Carroll

Michigan

Baraga

North Carolina

Duplin
Northampton

Texas

Bowie

Abundance

The 1959 European corn borer survey was conducted during the late summer and fall of the year. The survey is designed to measure the fall population of European corn borer larvae. The participating states were encouraged to time the surveys to include a high percentage of mature larvae whenever possible. In all cases, except for some minor differences in compiling data, the accepted survey methods were used.

The survey was continued on a district basis whenever possible in 1959. A district is usually a group of counties within a state, in some cases being based on the Agricultural Marketing Service Crop Reporting Districts. However, some of the states are being considered as a single district in this report. The population levels for 1958 and 1959 are shown in Table 1.

Population levels of the European corn borer were generally lower than 1958 in the Central States. Decreases that were most notable were in Iowa, Kansas, Missouri, Nebraska and North Dakota, where the number of borers per 100 plants averaged 99, 48, 36, 116 and 125, respectively, compared with 166, 135, 96, 177 and 219 in 1958. Slight decreases were recorded in Illinois and South Dakota. Population increases were noted in Indiana, Minnesota, Ohio and Wisconsin, but they were generally only slight.

In the Eastern States, populations were generally higher than those encountered in 1958, with the exception of Virginia. In Delaware and New Jersey, substantial increases were recorded. The average number of borers per 100 plants in the latter named states was 394 and 271, compared with 249 and 169 in 1958. This year's State average for Delaware was 145 borers per 100 plants over the 1958 record high of 249. The counts of 722 in Mercer County and 568 in Middlesex County, New Jersey, were the highest county averages recorded during the 1959 survey. Populations in Pennsylvania, West Virginia and New York were only slightly higher than those recorded in 1958.

Surveys were conducted in Michigan and Arkansas again in 1959, but population counts were not included in the United States average since they were not comparable to the 1958 survey. Districts were used for the first time in Arkansas, with the highest counts being recorded in east central district (80 borers per 100 plants). The survey in Michigan indicates that populations are about the same as those recorded in 1958.

For the states reporting, based on comparable districts or counties surveyed, the average number of borers per 100 plants decreased from 106 in 1958 to 102 in 1959.

A summary of the 1958 and 1959 surveys is shown on Table 1 by States and Districts. State summaries are shown on Table 2. Accompanying maps show districts surveyed, approximate population levels, and counties infested for the first time in 1959.

Table 1. Summary by States of European Corn Borer Abundance in Corn, Fall of 1959, Compared With Data for 1958

States	1958			1959			Comparable Districts or Counties Surveyed Both Years		
	No. of Districts Surveyed	Average No. of Borers Per 100 Plants	No. of Counties Surveyed	No. of Districts Surveyed	Average No. of Borers Per 100 Plants	No. of Counties Surveyed	Number	Borers Per 100 Plants 1958	Borers Per 100 Plants 1959
Eastern									
Delaware	1	249	3	1	394	3	1	249	394
Maryland 2/	3	95	23	3	114	23	3	95	114
New Jersey	1	169	12	1	271	12	12	169	271
New York	1	21	7	1	32	2	2	7	32
Pennsylvania 2/	1	38	26	1	54	36	26	38	58
Virginia	2	252	20	2	182	20	2	252	182
West Virginia	1	25	14	1	29	15	9	16	21
Total	10		105	10		111			
Average 1/								118	153
North Central									
Illinois 2/	1	64	43	1	77	40	40	80	77
Indiana 2/	12	43	92	12	65	91	12	43	65
Iowa	12	166	99	12	50	99	12	166	99
Kansas 2/	4	106	35	4	38	36	3	135	48
Minnesota	6	16	63	6	35	63	6	16	35
Missouri	8	96	50	8	36	46	8	96	36
Nebraska	8	177	72	8	116	66	8	177	116
North Dakota	3	179	6	1	125	2	1	219	125
Ohio 2/	1	43	30	1	73	33	30	43	72
South Dakota	6	83	42	6	52	40	6	83	51
Wisconsin	9	15	62	9	32	58	9	15	32
Total	71		594	68		574			
Average 1/								98	69
United States									
Total	81		699	78		685			
Average 1/								106	102
States Surveyed but not Included in U. S. Average									
Arkansas	1	39	16	4	55	18			
Michigan	3	7	22	1	11	6			

1/ Weighted averages based on districts surveyed.

2/ 1958 figures revised.

Table 2 - European Corn Borer Abundance in Corn, Fall of 1959, Compared with Data for 1958

State	Average Number of Borers Per 100 Plants	
	1958	1959
Arkansas (Ext. Ser., Exp. Sta.)		
North Central	-	32
Northeast	-	68
East Central	-	80
Southeast	-	40
State mean	39	55
(Survey in 1958 represented 16 counties).		
Delaware (Agr. Exp. Sta.)		
Kent	249	427
New Castle	193	282
Sussex	304	473
State mean	249	394
Illinois 1/ (Natural History Survey, Ext. Ser.)		
Adams	138	175
Boone	36	64
Brown	98	104
Bureau	158	208
Champaign	24	3
Christian	73	36
Clark	16	27
De Kalb	99	200
Du Page	55	59
Effingham	14	45
Greene	40	69
Hancock	192	64
Henderson	146	87
Iroquois	47	61
Jasper	18	16
Jefferson	0	4
Jo Daviess	94	114
Kankakee	48	107
Knox	203	108
Lake	57	39
La Salle	101	120
Lawrence	31	29
Livingston	93	85
Logan	98	12
McDonough	149	65
McLean	134	118
Illinois (cont'd)		
Macon	31	28
Macoupin	58	127
Madison	29	33
Mercer	164	100
Moultrie	53	9
Ogle	124	211
Peoria	81	53
St. Clair	9	9
Sangamon	35	14
Vermilion	34	11
Whiteside	165	184
Will	36	75
Winnebago	57	83
Woodford	168	121
State mean	80	77
Indiana 1/ (Ext. Ser., Exp. Sta.)		
North Northwest	78	50
North North Central	69	93
North Northeast	44	208
Northwest	37	49
North Central	61	107
Northeast	46	72
Southwest	15	10
South Central	32	21
Southeast	88	64
South Southwest	17	23
South South Central	20	30
South Southeast	17	52
State mean	43	65
Iowa (State Dept. of Agr., Ext. Ser., Exp. Sta., Ent. Research USDA)		
District I	166	245
District II	74	78
District III	23	15
District IV	396	123
District V	93	37
District VI	81	52
District VII	411	30
District VIII	151	26
District IX	171	47
District X	296	23
District XI	146	16
District XII	131	18
State mean	166	50

1/ 1958 figures revised.

Table 2 - (Cont'd)

State	Average Number of Borers Per 100 Plants 1958	Average Number of Borers Per 100 Plants 1959
Kansas 1/ (Ins. Sur.)		
Northeast	263	72
North Central	37	33
Southeast	19	8
East Central	105	40
State mean	106	38
State mean comparable districts (3)	135	48
Maryland 1/ (Agr. Ext. Ser., Ins. Sur.)		
Eastern Shore	172	191
Southern area	38	68
Western and Central areas	47	62
State mean	95	114
Michigan (Ext. Ser.)		
State mean	7	11
(Survey in 1958 represented 3 districts (22 counties), while survey in 1959 represents 1 district (6 counties))		
Minnesota (State Dept. of Agr.)		
West Central	23	19
Central	10	20
East Central	3	22
Southwest	46	119
South Central	16	42
Southeast	6	22
State mean	16	35
Missouri 2/ (Ext. Ser., Ins. Sur.)		
District I	161	47
District II	89	43
District III	131	56
District IV	137	35
Missouri (cont'd)		
District V	69	31
District VI	22	24
District VII	32	12
District IX	123	42
State mean	96	36
Nebraska 2/ (Agr. Exp. Sta., Ext. Ser., Ins. Sur.)		
North	88	79
Northeast	330	223
Northwest	22	25
Central	177	158
East	299	170
South	160	161
Southeast	276	66
Southwest	65	42
State mean	177	116
New Jersey (Dept. of Agr. and College of Agr.)		
Burlington	188	256
Camden	128	372
Cumberland	200	155
Gloucester	163	344
Hunterdon	16	164
Mercer	186	722
Middlesex	299	568
Monmouth	369	333
Salem	168	95
Somerset	293	175
Sussex	11	9
Warren	8	57
State mean	169	271
New York (Ext. Ser.)		
Dutchess	4	22
Erie	11	43
Onondaga	70	-
Orleans	1	-
Ulster	21	-
State mean	21	32
State mean comparable counties (2)	7	32

Nassau and Suffolk Counties surveyed in 1958, but not included in mean total; only 2 samples taken

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1/ 1958 figures revised.

2/ Crop Reporting Districts.

Table 2 - (Cont'd)

State	Average Number of Borers Per 100 Plants	
	1958	1959
North Dakota		
(State Dept. of Agr.)		
District II	219	125
Ohio 1/		
(Agr. Exp. Sta., Ext. Ser.)		
Northwestern Counties		
Allen	29	88
Defiance	-	33
Fulton	34	102
Hancock	15	62
Hardin	6	29
Henry	65	100
Lucas	54	68
Paulding	32	64
Putnam	107	110
Van Wert	19	71
Williams	-	51
Wood	24	45
West Central Counties		
Auglaize	21	18
Champaign	30	18
Clark	49	28
Darke	7	176
Logan	4	17
Mercer	8	107
Miami	48	72
Shelby	22	11
Union	14	38
Central Counties		
Delaware	21	135
Fayette	164	14
Franklin	38	41
Madison	28	14
Pickaway	50	83
Southwestern Counties		
Butler	76	100
Clinton	-	78
Greene	115	34
Montgomery	51	161
Preble	50	283
Warren	56	59
Northeastern County		
Wayne	50	91
State mean	43	73
State mean comparable counties (30)	43	72

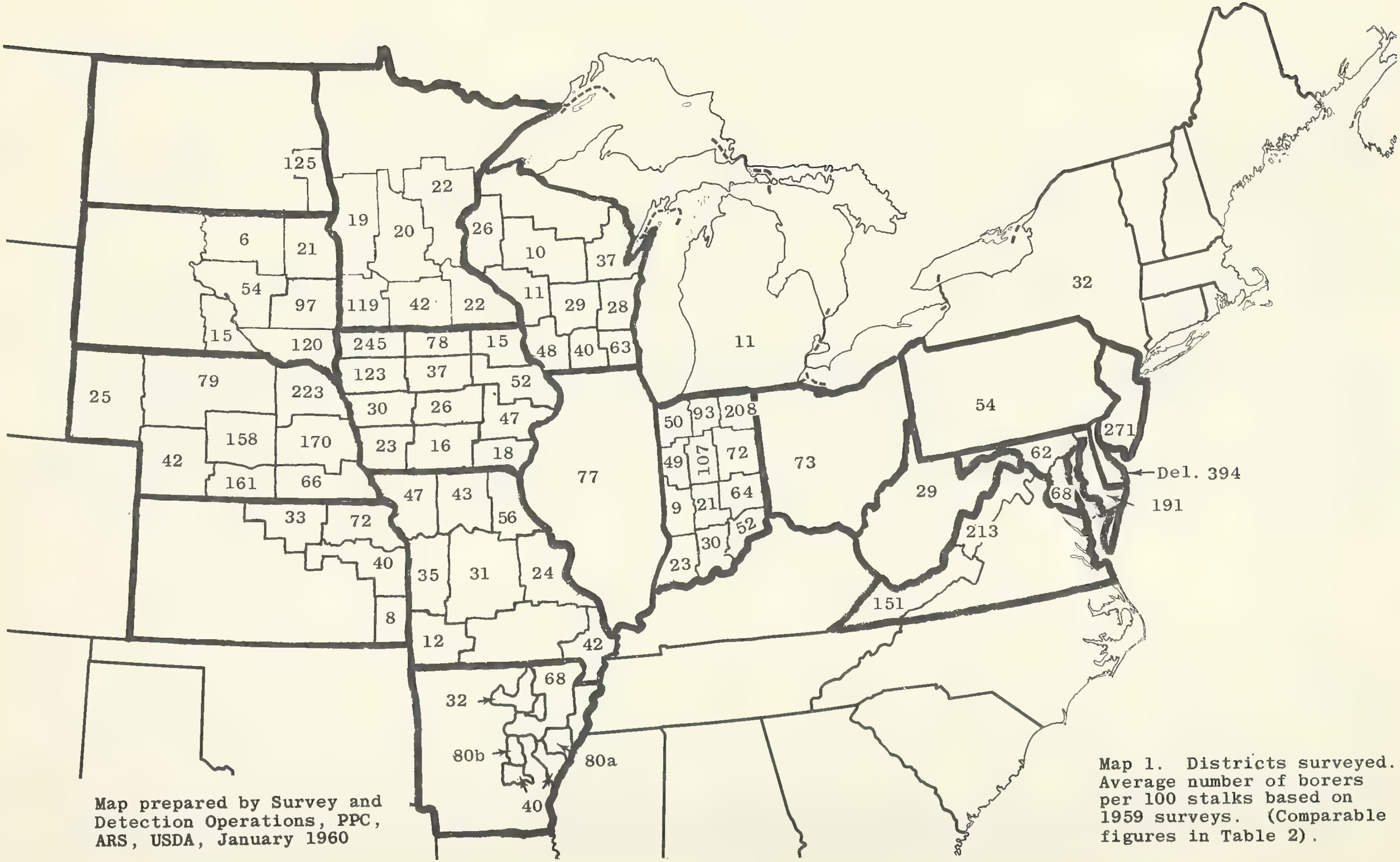
State	Average Number of Borers Per 100 Plants	
	1958	1959
Pennsylvania 1/		
(State Dept. of Agr.)		
Adams	24	58
Armstrong	28	26
Berks	73	115
Bucks	25	92
Butler	-	31
Centre	17	21
Chester	160	162
Crawford	12	13
Cumberland	21	51
Dauphin	288	23
Erie	7	1
Fayette	5	50
Franklin	52	85
Fulton	-	129
Indiana	18	65
Juniata	-	49
Lancaster	151	55
Lawrence	5	55
Lebanon	181	30
Lehigh	44	68
Luzerne	-	23
Lycoming	-	17
Mercer	4	26
Mifflin	-	38
Montgomery	22	151
Northampton	45	77
Perry	6	36
Schuylkill	-	64
Snyder	28	58
Somerset	-	30
Union	-	12
Warren	17	9
Washington	14	74
Westmoreland	19	52
Wyoming	-	30
York	27	56
State mean	38	54
State mean comparable counties (26)	38	58
South Dakota		
(Agr. Exp. Sta., Ext. Ser.)		
North Central	108	6
Northeast	49	21
Central	63	54
East Central	103	97
Southeast	126	120
South Central	51	10
State mean	83	51

1/ 1958 figures revised

Table 2 - (Cont'd)

State	Average Number of Borers Per 100 Plants	
	1958	1959
Virginia (Ins. Sur.)		
Northern District	290	213
Southwestern District	213	151
State mean	252	182
West Virginia (Exp. Sta.)		
Berkeley	-	83
Braxton	3	5
Hancock-Ohio-Brooke	Trace	64
Clay	-	12
Greenbrier	8	31
Hampshire	51	19
Hardy	-	22
Harrison	21	39
Berkeley-Jefferson	124	-
Kanawha	-	33
Monongalia	27	16
Monroe	8	18
Nicholas	1	Trace
Pleasants	-	27
Preston	22	46
Wood	7	20
State mean	25	29
State mean comparable counties (9)	16	21
Wisconsin (State Dept. of Agr.)		
Northwest	12	26
North Central	12	10
West Central	10	11
Central	5	29
Southwest	20	48
South Central	17	40
Southeast	9	63
East Central	28	28
Northeast	20	37
State mean	15	32

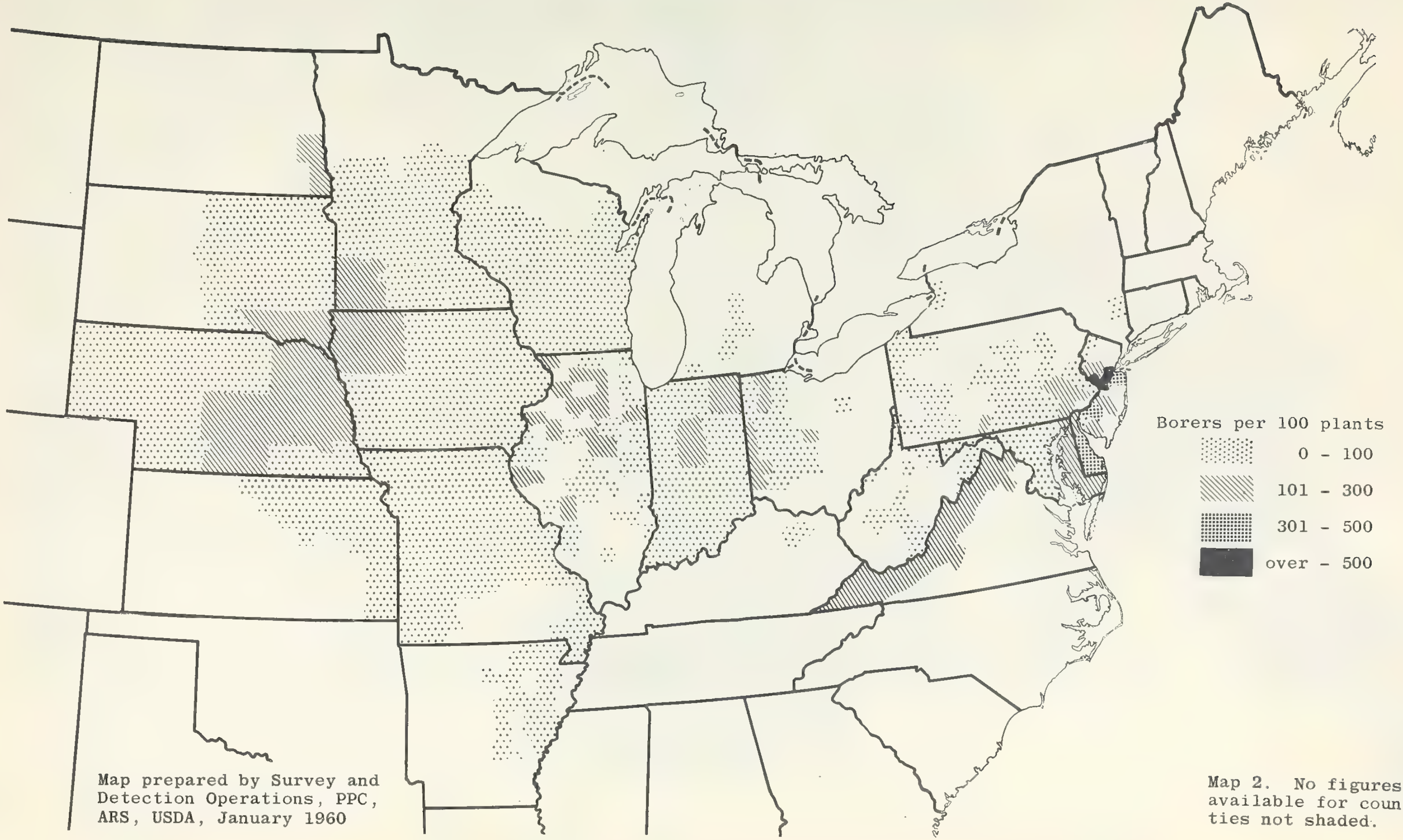
EUROPEAN CORN BORER ABUNDANCE
FALL 1959



Map prepared by Survey and
Detection Operations, PPC,
ARS, USDA, January 1960

Map 1. Districts surveyed. Average number of borers per 100 stalks based on 1959 surveys. (Comparable figures in Table 2).

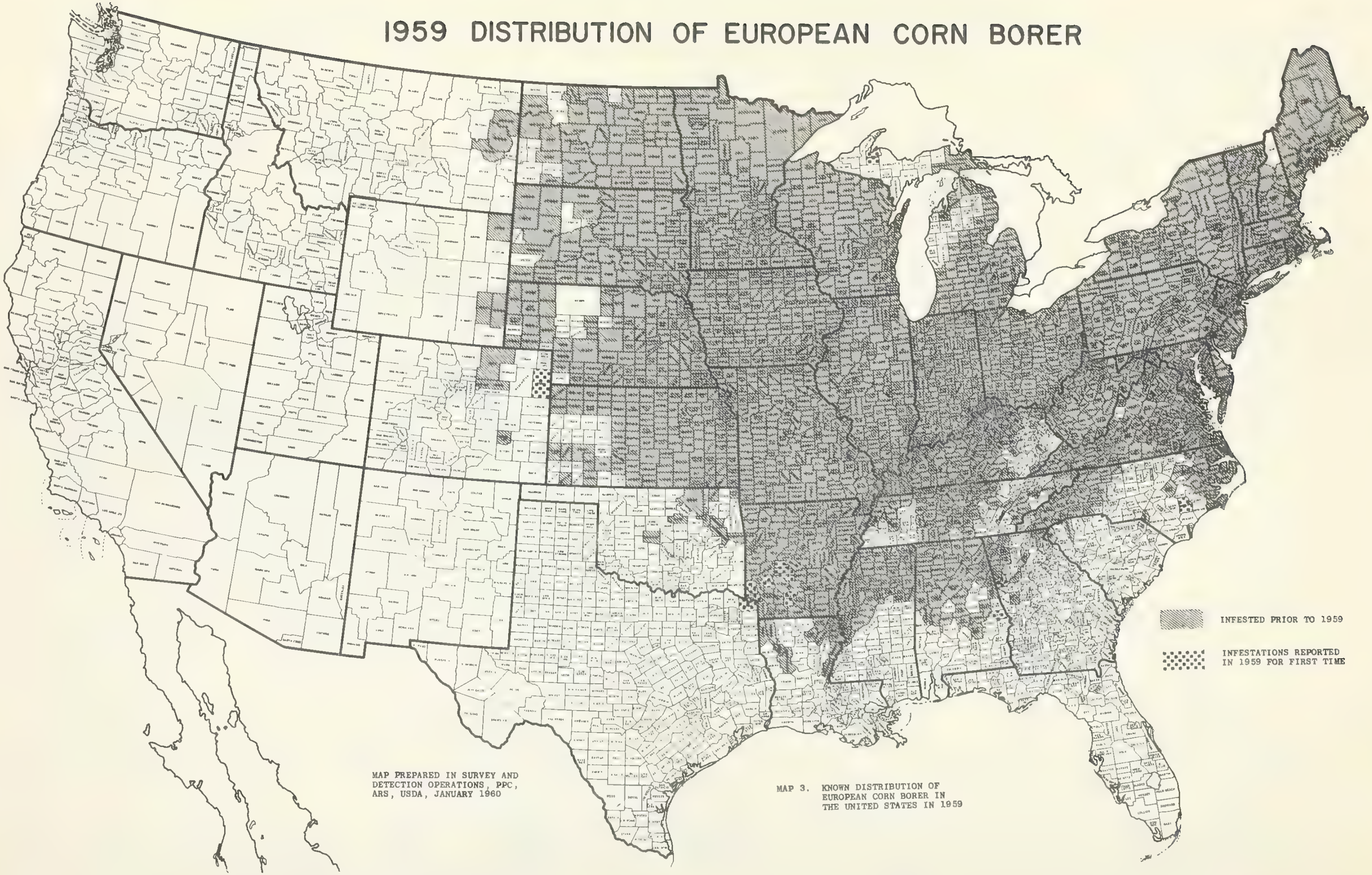
EUROPEAN CORN BORER ABUNDANCE
FALL 1959



Map prepared by Survey and Detection Operations, PPC, ARS, USDA, January 1960

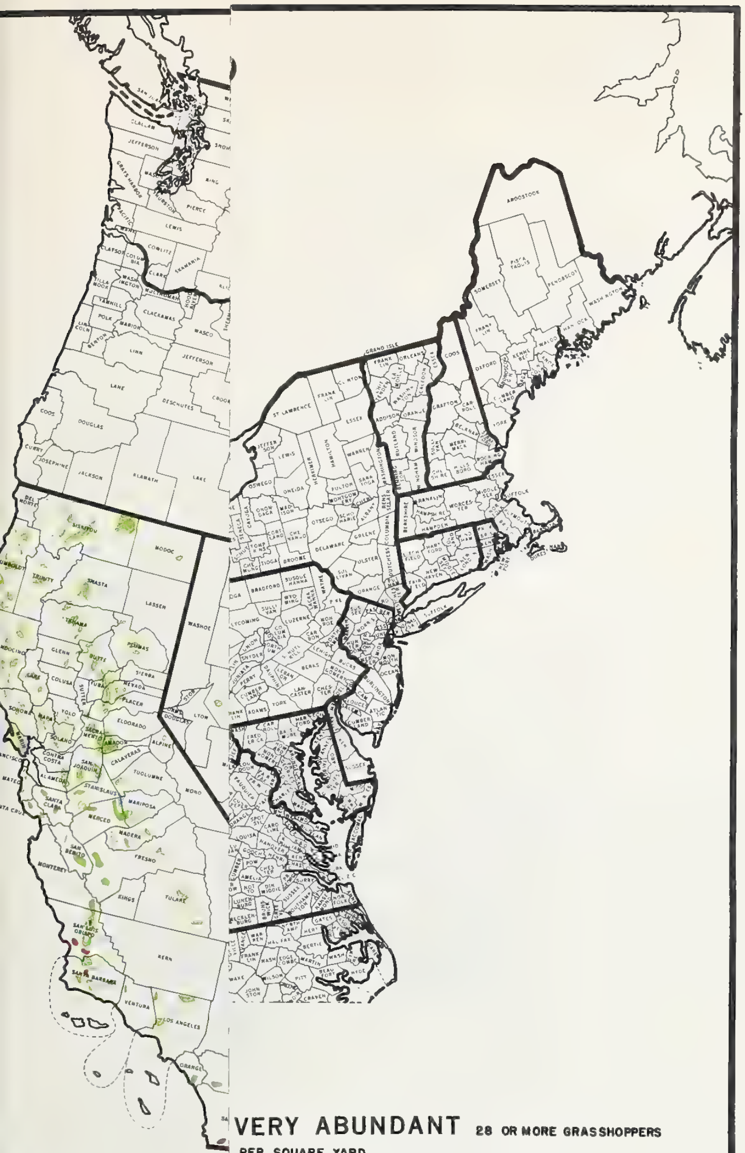
Map 2. No figures available for counties not shaded.

1959 DISTRIBUTION OF EUROPEAN CORN BORER



MAP PREPARED IN SURVEY AND
DETECTION OPERATIONS, PPC,
ARS, USDA, JANUARY 1960

MAP 3. KNOWN DISTRIBUTION OF EUROPEAN CORN BORER IN THE UNITED STATES IN 1959



VERY ABUNDANT 28 OR MORE GRASSHOPPERS PER SQUARE YARD

ABUNDANT 15 TO 28 GRASSHOPPERS PER SQUARE YARD

MODERATE 8 TO 14 GRASSHOPPERS PER SQUARE YARD

LIGHT 3 TO 7 GRASSHOPPERS PER SQUARE YARD

SOLID COLORS - RANGELAND INFESTATIONS

STIPPLED COLORS - CROPLAND INFESTATIONS

FOR CONTROL ON CROP OR RANGELAND NEXT SEASON ND UPON TYPE OF HABITAT, SPECIES PRESENT, WEATHER, TION OF VEGETATION.

INFORMATION CONCERNING THE GRASSHOPPER PROBLEM C AREAS CAN BE OBTAINED FROM STATE PEST OFFICIALS, COUNTY AGENTS, AND PLANT PEST DIVISION PERSONNEL.

PREPARED IN PPC, ARS, USDA
DECEMBER 1, 1959

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AGRICULTURAL RESEAR
PLANT PEST CONTROL

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IOPPER INFESTATIONS –

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TOTAL ACRES	
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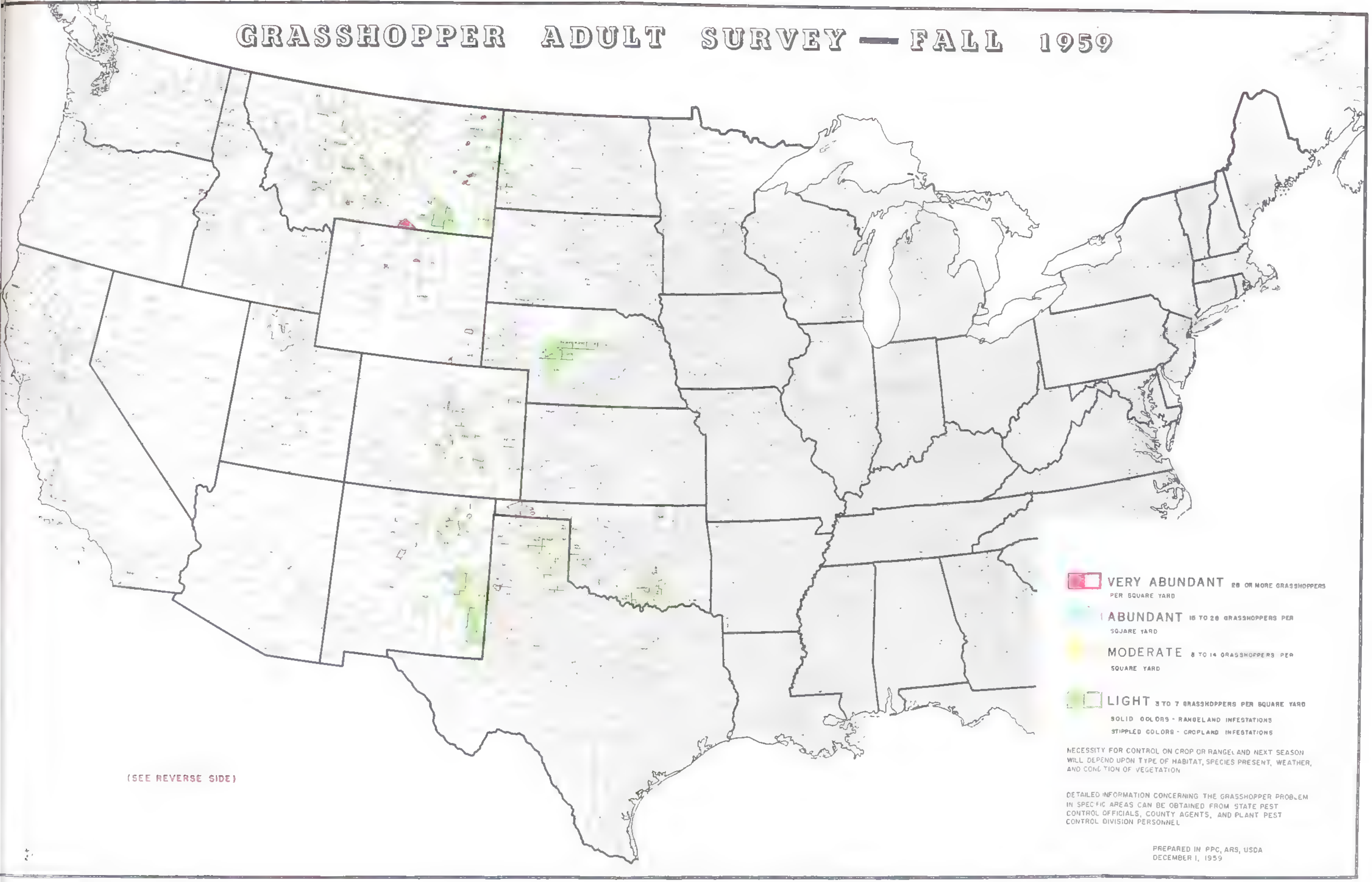
GRASSHOPPER ADULT SURVEY — FALL 1959


🟥 VERY ABUNDANT 20 OR MORE GRASSHOPPERS PER SQUARE YARD
ABUNDANT 15 TO 20 GRASSHOPPERS PER SQUARE YARD
MODERATE 8 TO 14 GRASSHOPPERS PER SQUARE YARD
🟩 LIGHT 3 TO 7 GRASSHOPPERS PER SQUARE YARD
SOLID COLORS - RANGELAND INFESTATIONS
STIPPLED COLORS - CROPLAND INFESTATIONS

NECESSITY FOR CONTROL ON CROP OR RANGELAND NEXT SEASON WILL DEPEND UPON TYPE OF HABITAT, SPECIES PRESENT, WEATHER, AND CONDITION OF VEGETATION

DETAILED INFORMATION CONCERNING THE GRASSHOPPER PROBLEM IN SPECIFIC AREAS CAN BE OBTAINED FROM STATE PEST CONTROL OFFICIALS, COUNTY AGENTS, AND PLANT PEST CONTROL DIVISION PERSONNEL

PREPARED IN PPC, ARS, USDA
DECEMBER 1, 1959

(SEE REVERSE SIDE)

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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

TO COOPERATORS

This map is based upon the results of cooperative grasshopper adult surveys made during the late summer and fall of 1959. The survey reveals where and how many grasshoppers infest an area, and indicates the potential severity of infestations for 1960. Nymphal surveys, made in the spring, determine population densities, and indicate those areas where control may be necessary in 1960.

The infestations on croplands, shown on the map in stippling, in general are slightly lower than that which was indicated in 1959. Control on those lands will be handled by the farmers with technical assistance from Division and State personnel. The infested range areas, shown on the map in solid colors (orange, blue and red), total 5,667,010 acres in 13 Western and Midwestern States. Shaded areas on the map are diagrammatic. Within these areas, infestations may be solid or spotted.

RANGELAND GRASSHOPPER INFESTATIONS — ACREAGE BY REGIONS, FALL 1959

(Moderate Populations or Above – Orange, Blue and Red)

REGION AND STATE	LANDOWNERSHIP – ACRES		TOTAL ACRES
	PRIVATE AND STATE	PUBLIC DOMAIN	
CENTRAL:			
No. Dakota	70, 200	21, 760	91, 960
So. Dakota	—	3, 000	3, 000
WESTERN:			
Arizona	7, 000	17, 300	24, 300
California	1, 191, 440	38, 000	1, 229, 440
Colorado	866, 500	123, 500	990, 000
Nevada	4, 200	10, 000	14, 200
Montana	718, 500	330, 500	1, 049, 000
New Mexico	713, 800	22, 200	736, 000
Oregon	—	10, 000	10, 000
Idaho	61, 200	193, 810	255, 010
Washington	10, 000	—	10, 000
Wyoming	316, 000	64, 500	380, 500
SOUTHERN:			
Texas	873, 600	—	873, 600

The survey was planned and performed by the Plant Pest Control Division, Agricultural Research Service, in cooperation with various State agencies concerned.

December, 1959

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CH SERVICE
DIVISION

1959 DISTRIBUTION OF EUROPEAN CORN BORER

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reas, infestations may be solid or spotted.

– ACREAGE BY REGIONS, FALL 1959

Orange, Blue and Red)

REGION AND STATE	LANDOWNERSHIP – ACRES		TOTAL ACRES
	PRIVATE AND STATE	PUBLIC DOMAIN	
ntana	718, 500	330, 500	1, 049, 000
w Mexico	713, 800	22, 200	736, 000
egon	—	10, 000	10, 000
iho	61, 200	193, 810	255, 010
shington	10, 000	—	10, 000
oming	316, 000	64, 500	380, 500
THERN:			
xas	873, 600	—	873, 600

ch Service, in cooperation with various State agencies concerned.

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